

ABSTRACT

Chlamydia spp. are strictly intracellular pathogens that grow inside a vacuole, called an inclusion. They possess genes encoding proteins homologous to components of type III secretion machineries which, in other bacterial pathogens, are involved in delivery of bacterial proteins within or through the membrane of eukaryotic host cells. Inc proteins are chlamydial proteins that are associated with the membrane of the inclusion and are characterized by the presence of a large hydrophobic domain in their amino acid sequence. To investigate whether some *Chlamydia* proteins, especially Inc proteins and other proteins exhibiting a similar hydrophobic profile, might be secreted, the inventors used an heterologous secretion system, namely a type III system. Chimeras were constructed by fusing the N-terminal part of these proteins with a reporter, the Cya protein of *Bordetella pertussis*, and expressed in various strains of *Shigella flexneri*. The inventors demonstrate that these hybrid proteins are secreted by the type III secretion system of *S. flexneri*. Moreover, the inventors show that three other proteins from *C. pneumoniae*, all of which have in common the presence of a large hydrophobic domain, are also secreted by *S. flexneri* type III secretion machinery.